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USSR STEEL PLANTS PUSH TECHNOLOGICAL IMPROVEMENTS

/Numbers in parentheses refer to the appended sources./

The drive started recently by 88 Moscow enterprises for better utilization existing production facilities has had wide response from metallurgical enterprises throughout the USSR. In November, some metallurgical enterprises made special pledges for increased production in honor of Stalin's birthday, 21 December.

In Moscow, the "Serp i molot" Plant had completed the Five-Year Plan for level of production on 13 October, having exceeded the 1950 level for steel production by 8.8 percent, for finished rolled products by 7.9 percent, and for gross-production output by 22.6 percent (1). The plant's success in exceeding progressive norms and in improving utilization of its facilities for greater production output has been the result of introduction of new technology, and has in turn resulted in new and higher progressive norms (2). A group of plant engineers and scientific workers, headed by Academician I. P. Bardin, was awarded the Stalin Prize last spring for developing the technology for and introducing into production the use of oxygen for intensifying the open-hearth smelting process. Among the winners were A. A. Lebed'kov, chief of open-hearth shop No 1, and A. G. Mament'yev, chief of open-hearth shop No 2 (1).

By the beginning of 1949, the first open-hearth shop had completely adopted the use of oxygen in smelting steel, and the shop's norms were raised accordingly to meet the increased production. Other technological measures adopted include the mechanical turning of ingots and the use of waste furnace gases for drying ladles. The time required for the latter process was thus cut in half (2). For their fourth-quarter goals, the shop's workers have pledged to increase the recovery of steel per square meter of furnace sole to 7.39 tons, an increase of 8.5 percent over the third quarter. Preparations have begun for conversion to automatic control of the feeding of fuel and air into the furnaces. A shop spectro analysis laboratory will be organized to make accurate analyses of the content of slag and steel.

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Open-hearth shop No 2 has pledged a recovery of steel of 9.1 tons per square meter of furnace sole, which will represent an increase of 1.7 percent over the third quarter and the highest production index to be achieved in the metallurgical industry. The shop's workers are giving particular attention to the creation of a large-scale auxiliary base where the charge is prepared. The system of transporting and preparing scrap is being improved to cut down on the time needed to charge the furnace.

The entire production cycle of the "750" Mill in the rolling shop is being made completely automatic. The "450" and "300" mills are being reconstructed. The pickling division is undergoing reorganization to increase rolled steel output further (3). The sheet-rolling shop has introduced alkaline pickling of sheet steel. As their answer to the Moscow enterprises' campaign, rolling shop workers have pledged to increase hourly productivity of chief machinery in the shop by 4-8 percent and to release 5,000 square meters of production area.

In the plant's autumn drive to increase furnace runs between repairs, one furnace was operated for 279 melts with the result that the recovery of steel per square meter of furnace sole was increased by more than one ton, 1,100 tons of steel were smelted above plan, the average daily productivity of the furnace increased by 7.1 tons, and 134 tons of mazut were saved. All of the plant's shops are now driving for greater durability of equipment between repair jobs. In the past 3 months, the durability of all furnaces in open-hearth shop No 1 has increased an average of 19 melts (2).

Since last year, the plant's losses from defective production have decreased 26.8 percent (3).

Another Moscow enterprise, the Moscow Pipe Plant (director, A. Kolyada), in its drive to increase production by fuller utilization of existing reserves, recently increased production out put 50 percent (4).

The Leningrad Rolled Steel and Wire and Cable Plant imeni Molotov has been making technological improvements through the efforts of its technical council. The council is currently working on problems of reconstructing the plant, improving production quality, adopting new types of production, and making radical changes in technology. It follows a definite plan, making a systematic check on the progress of its recommendations, and works closely with engineers and workers in industry and with scientific associates of the Leningrad Polytechnical Institute, "Gipromez" /State Institute for Planning Metallurgical Plants ?/, "Giprometiz" /State Institute for Planning Metal Consumers' Goods Enterprises ?/, and "Mekhanobr" (Scientific Research Institute for Machine Processing of Minerals).

One of the problems solved by the council was an improvement in the patenting process to obtain greater uniformity in steel wire. This problem had been plaguing the plant for a long time, since overheating of the lead could not be avoided and the fluctuation in the temperature of the lead bath prevented uniformity in the wire. The council has also recommended adoption of hot washing of the wire to prevent formation of crystals on its surface. Water cooling is being used on multiple draw benches as a result of a council proposal. The design of existing patenting furnaces is being reconsidered by the council with a view toward obtaining uniform heating (5).

The Leningrad "Trubostal'" Plant has introduced straight-line operations in galvanizing pipe in the galvanizing shop with the result that the machinery's productivity has been doubled and consumption of zinc has been cut substantially. The shop's workers are also developing a method for mechanized feeding of pipe into the zinc bath, which will also result in higher productivity of existing machinery (6).

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The "Krasnyy metallurg" Plant, Liyepaya, Latvian SSR, has answered the Moscow appeal by starting a drive to increase the hourly removal of steel per square meter of open-hearth furnace to 5 tons, to increase output of rolled wire by 60 percent over the fourth quarter 1948, of section rolled metal by 16 percent, and of drawn wire by 36 percent. By better utilization of production area, the plant also expects to increase output of shaped iron and castings by 62 percent and to increase the productivity of the molding area by 61 percent. The machine shop plans to increase output of rolled cylinders by 32 percent. Twenty new machines are being installed in the nail shop, which should thereby increase production 20 percent (7).

At the same time, however, the plant has been criticized for not meeting the plan for steel output. The October plan statistics for the republic show that only 75 percent of the month plan for steel had been fulfilled and that steel output was only 77 percent of that of October 1948. The "Sarkanays metalurgs" Plant, Ministry of Local Industry Latvian SSR, fulfilled the October gross-production plan 108 percent but also fell short of the plan for quantity of steel output. The month plan for rolled metal for the republic, on the other hand, was fulfilled 111 percent and was 157 percent of October 1948 (8).

In the Karelo-Finnish SSR, the Vyartsilya Metallurgical Plant has fulfilled the 1949 plan for finished goods production 124 percent and has released so far this year 1,300,000 rubles of working capital to be remitted to the state (9).

Among metallurgical enterprises in the southern USSR, the Moscow appeal has gained a wide following.

The Metallurgical Plant imeni Dzerzhinskiy, Dnepropetrovsk Oblast, has made a number of technological improvements to increase production. The blast furnaces have been converted to graded coke, which provides them with uniform operation and saves 300,000 rubles per year (10). For 10 months of 1949, the plant's blast-furnace workers obtained an average of one ton of pig iron per 0.88 cubic meter of furnace capacity, while last year the coefficient for utilization of blast-furnace capacity was only 0.91. A new heating system which will increase the temperature of the blast has been worked out for the blast furnaces. On all furnaces, an adjustment of the charge for removal of blast-furnace dust will be carried out every 2 hours. Losses of pig iron are being cut in half.

The plant's steelworkers have increased the recovery of steel per square meter of furnace sole by half a ton. A pouring bridge crane is being assembled in the second open-hearth shop and will increase the weight of the melt in two furnaces by 13 percent (11). Automatization of the control of open-hearth furnace No 10 has been completed, increasing its productivity 6 percent. The operation of two other open-hearth furnaces and three rolling mills is also being made automatic (10). Case hardening of all rollers is being carried out in the rolling mills, increasing durability 200-300 percent. In many mills, cast-iron rollers are being replaced by steel rollers (11).

In mid-November, this plant completed and dispatched the tenth trainload of steel for construction of high buildings in Moscow for 1949. The new rolling shop was reported to have exceeded the norm for hourly productivity of equipment planned for 1950 by 150 percent (12).

The Nikopol' Southern Pipe Plant, Dnepropetrovsk Oblast, has increased production 65 percent over 1948 and is taking measures to increase production another 25 percent. It also plans to attain the 1950 production level in December. Drawing machines in shop No 1 are being made automatic, and a regulated regime has been adopted in operating the "Bol'shoy Shtifel'" Mill.

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The plant has released 3,000 square meters of production area and is installing equipment for output of new types of seamless pipe (13). Since the beginning of 1949, the plant has realized 50 million rubles in profits (14).

On 17 November, the "Azovstal'" Plant, Stalino Oblast, completed the Five-Year Plan for production of rolled metal (15), and on 20 November rolling-mill workers had completed the first trainload of rolled products toward the 1951 goal (16). In 10½ months, the plant has produced as much rolled metal as had been planned for 1950 (15).

The plant's open-hearth shop has exceeded the steel production level planned for 1950. In 10 months of 1949, the shop has smelted the volume of steel which had been planned for all of 1950 (17). Steelworkers are now completing melts in 13-14 hours instead of 17 hours 30 minutes (18). The plant record for steel recovery per square meter of furnace sole is now 9.15 tons as compared with the norm of 5.4 tons and the socialist pledge of 7.8 tons (19).

The "Zaporozhstal'" Plant, Zaporozh'ye Oblast, in answer to the Moscow appeal for better use of production reserves, plans to increase output of steel in existing open-hearth furnaces by 13 percent as a result of improved technology, particularly by use of oxygen in the steel-smelting process (20).

In 10 months of 1949, the Metallurgical Plant imeni Voroshilov in Voroshilovsk, Voroshilovgrad Oblast, exceeded the 1950 production level for pig iron by almost 10 percent and considerably exceeded the prewar production level. Pig-iron smelting increased more than 50 percent over 1948. The best blast-furnace operators have achieved a coefficient of 0.69 for capacity utilization of the furnace as compared with the planned 0.70. Transport workers are speeding up operations in dispatching pig-iron and slag cars on schedule (21).

The leading shift of the "1700" Rolling Mill at the Stalingrad "Krasnyy Oktyabr'" Plant has converted to an hourly schedule and has increased the mill's productivity to 88 sheets per hour. Leading steelworkers are completing standard-weight melts in 7 hours 15 minutes as compared with the norm of 10½ hours (22).

The Taganrog Metallurgical Plant imeni Andreyev, Rostov Oblast, has completed the Five-Year Plan for the entire metallurgical cycle. The 1950 gross-production plan was fulfilled from November 1948 to November 1949 by 125.2 percent, and the Five-Year Plan for pipe production was completed in 3 years, for rolled metal in 3½ years, and for steel in 3 years 10 months (23). In 1948, the average recovery of steel per square meter of hearth in the plant's second open-hearth shop was less than 6 tons, whereas now it is 7.3 tons, and workers are now driving for 8.2 tons per square meter (24).

In Kazakhstan, the metallurgical Plant in Temir-Tau is taking measures to improve utilization of plant facilities. Open-hearth furnaces are being insulated to speed smelting and save fuel (25), and the shop has pledged to increase steel smelting in the existing equipment by 10 percent (26). Formerly, the average recovery of steel per square meter of furnace hearth was 4 tons. With a reorganization of work, the weight of all melts was increased by 16 or more tons, and the recovery of steel has increased to 6½ tons per square meter (27).

Changes made in the plant's "400" Mill will increase rolled metal output by 10-12 percent. Sorting of finished steel bars will be transferred from the open-hearth shop to the cleaning department. New storage installations are being erected (25).

The plant's foundry has increased labor productivity 75 percent over 1948 and has increased output of molds for the open-hearth shop by 100 percent. The shop is adopting new types of production, including bottom plates for its own use (28).

In October, the Aktyubinsk Ferroalloy Plant (director, V. Nakhabin), Kazakh SSR, exceeded the 11-month plan and also exceeded the average monthly level of production planned for 1950 (29).

The Uzbek Metallurgical Plant fulfilled the October plan for steel production 106 percent, which was double the October 1948 figure (30).

In Ural metallurgical plants as a whole, for 10 months of 1949, smelting of pig iron increased 14.5 percent, steel 19.4 percent, and output of rolled metal 17.1 percent over the same period of 1948 (31). The Ural plants have made active response to the Moscow drive and have made a series of pledges in honor of Stalin's birthday.

The Metallurgical Combine imeni Stalin in Magnitogorsk has put in new equipment in its main machinery shop, removing storage area to make room. High-frequency generators for heat treatment of parts, new machine tools, bracket cranes, and electric cars for transporting heavy loads are being installed (32). The combine's repair shift has set a new record for capital repair of an open-hearth furnace, completing the job in 8 days, or 50 hours ahead of schedule (33).

In honor of Stalin, the combine has pledged to complete the 1949 plans for steel production and rolled metal on 25 December, and the plan for pig iron on 27 December (34).

The Zlatoust Metallurgical Plant imeni Stalin (director, Nesterov), Chelyabinsk Oblast, completed the Five-Year Plan for production volume and for the entire production cycle by 5 December, and, without any additions to production facilities, increased steel production 60 percent and rolled metal output 40 percent over 1945. By Stalin's birthday, the plant has pledged to produce 53,000 tons of steel and 19,000 tons of rolled metal above the Five-Year Plan (34). Among the innovations adopted by the plant to increase rolled-steel output and to decrease costs is automatic control of the process of heating steel ingots in soaking pits (35).

The Chusovoy Metallurgical Plant, Molotov Oblast, without putting into service new production equipment, has this year increased the production of pig iron 40 percent, steel 76 percent, and rolled metal 56 percent over 1945, and has decreased production costs 28 percent. The plant is taking measures to improve utilization of existing equipment. The blast-furnace shop is modernizing Cowper stove operations, is improving loading facilities, will put into operation a new electric air blower, and is introducing automatic control of the temperature of the blast. All these measures should increase pig iron smelting an additional 20 percent (26). The average coefficient of capacity utilization of blast furnaces is 0.91, and the recovery of steel per square meter of hearth has been increased to 4.39 tons (36). Automatization of open-hearth furnaces and complete regulation of the process of conducting the melt will increase productivity in the steel smelting shop by 20 percent. Automatization of rolling mills is being completed. Soaking pits are being reconstructed, and rolling-mill workers have pledged to increase production output by 15 percent (26).

The Lys'va Metallurgical Plant, Molotov Oblast, completed the 1950 plan for production volume for the entire metallurgical cycle in 1948. The plant's average daily output in 1949 exceeds the level planned for 1950 as follows: steel smelting, 45 percent; finished rolled products, 36 percent; tin plate, 75 percent, and galvanized iron, 44 percent.

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The Nizhniy Tagil Plant imeni Kuybyshev, Sverdlovsk Oblast, has made the following plans for December: to complete the 1949 plan for pig iron on 24 December, for steel smelting on 22 December, for commercial rolled metal on 26 December, and for roofing iron by 20 December; to save 1½ million rubles by mechanization and efficiency measures; and to produce 6,200,000 rubles' worth of goods above plan by 21 December (34).

The Serov Metallurgical Plant has speeded pig-iron production by improving methods of feeding air into the furnaces. Pig-iron smelting per cubic meter of blast-furnace capacity has increased by 500-600 kilograms (37).

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1. Vechernyaya Moskva, No 263, 4 Nov 49
2. Moskovskiy Bol'shevik, No 275, 23 Nov 49
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4. Moskovskiy Bol'shevik, No 261, 4 Nov 49
5. Leningradskaya Pravda, No 231, 30 Sep 49
6. Leningradskaya Pravda, No 262, 5 Nov 49
7. Sovetskaya Latviya, No 271, 18 Nov 49
8. Sovetskaya Latviya, No 269, 16 Nov 49
9. Leninskoye Znamya, No 219, 5 Nov 49
10. Kommunist, No 275, 23 Nov 49
11. Krasnyy Flot, No 270, 16 Nov 49
12. Moskvoskiy Bol'shevik, No 269, 16 Nov 49
13. Trud, No 276, 23 Nov 49
14. Sovetskaya Kirgiziya, No 230, 23 Nov 49
15. Leningradskaya Pravda, No 270, 17 Nov 49
16. Krasnyy Flot, No 274, 20 Nov 49
17. Izvestiya, No 269, 15 Nov 49
18. Pravda, No 315, 11 Nov 49
19. Pravda Ukrainy, No 263, 6 Nov 49
20. Pravda Ukrainy, No 266, 11 Nov 49
21. Krasnaya Zvezda, No 275, 22 Nov 49
22. Izvestiya, No 276, 23 Nov 49
23. Izvestiya, No 268, 13 Nov 49
24. Trud, No 271, 17 Nov 49

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(Continued)

25. Kazakhstanskaya Pravda, No 227, 20 Nov 49

26. Krasnaya Zvezda, No 269, 15 Nov 49

27. Kazakhstenskaya Pravda, No 218, 5 Nov 49

28. Kazakhstanskaya Pravda, No 225, 18 Nov 49

29. Kazakhstanskaya Pravda, No 219, 7 Nov 49

30. Pravda Vostoka, No 228, 19 Nov 49

31. Pravda, No 308, 4 Nov 49

32. Moskovskiy Bol'shevik, No 262, 5 Nov 49

33. Leningradskaya Pravda, No 269, 16 Nov 49

34. Gudok, No 146, 7 Dec 49

35. Izvestiya, No 262, 5 Nov 49

36. Pravda, No 311, 7 Nov 49

37. Pravda Ukrainy, No 267, 13 Nov 49

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